

**Pathology.** Experiments have been made to ascertain the amount of antiscorbutic substance in various foodstuffs; they have involved hundreds of observations, each extending from three to six months; the results are expressed in the following table, in which the average value of one gram of lemon juice is taken as 100:

Fresh lemon juice ...	100	Carrot juice ...	7
Fresh orange juice ...	100	Beet juice ...	7
Fresh cabbage juice ...	100	Potato, boiled 30 mins. ...	7
Ripe onion ...	103	Tamarind ...	7
Fresh swede juice ...	60	Cocum ...	7
Fresh turnip juice ...	60	Mango ...	7
Green French beans, un-		Grape juice ...	5
cooked ...	30	Fresh cow's milk ...	1 to 1.5
Germinated peas ...	30	Dried cow's milk ...	less than 0.5

The influence of heating and drying was tested in the same way in the case of cabbage, fresh juices, and milk. The drying of vegetables even at a low temperature reduced their antiscorbutic value to 10 per cent. or less of the original. The factor is much more stable in acid fruit juices. It will be noticed from the table that dried milk was found to possess less than half the antiscorbutic value of fresh milk; a monkey on a maximum diet of dried milk developed acute scurvy, and was cured by the same quantity of fresh milk—a result of obvious import for infant feeding.

An experiment on the etiology of pellagra was made by Dr. Harriette Chick and Miss Hume. Monkeys were fed on a diet complete in every respect, save that the protein, which was derived from maize, was not of good biologic value. All the animals gradually lost in weight and became very weak. One of them developed cutaneous lesions strikingly like those of pellagra in the human subject, and two others patches of dermatitis of the same nature. The loss of weight was stayed by the daily addition of tryptophane and diamino acids, but otherwise no improvement was noticed. In the case with the severe skin lesions a dramatic cure was brought about directly casein was added to the diet.

#### *Antitoxic Serums.*

Experiments to ascertain whether antitoxic serum saturated with sodium chloride would prove sufficiently stable to be used as a standard antitoxin have given encouraging results. Diphtheria and tetanus antitoxins so treated have retained their original potency during twelve months, and proved as stable as the standard serums sent out by the Hygienic Laboratory, U.S. Public Health Service, Washington. Samples of the brined serums have been sent to that laboratory with a request that they may be compared with the standard serums. Brined anti-dysentery serum is being studied from the same point of view, and the possibility of using the method for vaccines is also being tested. Large quantities of various antitoxins and serums were supplied to the military and naval authorities during the year ending March 31st, 1920, and over one million and a half cubic centimetres of influenza vaccine have been supplied to the Ministry of Health.

#### *Antivariolous Vaccine.*

Some progress has been made in the study of the cultivation and identification of the specific organism of vaccinia. The experiments indicate that that organism can be propagated, although when cultivated under artificial conditions it ceases to be capable of producing its specific effect. Observations showing that certain animal products are specially congenial to the virus will encourage further research in this direction. The bulk of the antivariolous lymph produced is supplied to Crown colonies, mostly to tropical Africa. The satisfactory reports received from medical officers in Africa prove that the Institute has been successful in producing a vaccine which, even after transport and retention in a tropical climate, retains sufficient potency for successful vaccination.

#### *Research Hospital.*

Last year the members of the Institute decided that its constitution should be extended so as to make it possible to establish and maintain a residential hospital. The legal advisers were not satisfied that the resolution then adopted was correctly drawn; consequently at the meeting on May 12th a resolution embodying the principle in terms drafted by the lawyers was presented and adopted by the annual meeting and by an extraordinary general meeting. It will be submitted to a second extraordinary general

meeting on May 26th. In taking this step the Institute is following the precedent of the Pasteur Institute in Paris and the Rockefeller Institute in New York. The progress of medical research has proved that the divorce of the laboratory from clinical work is disadvantageous. The ordinary funds of the Institute cannot be used for the establishment of a hospital, but a site is available, and we do not doubt that the appeal which the Institute will issue for a special fund will be generously supported.

## VOLUNTARY HOSPITALS:

### RESULTS OF A PRELIMINARY SURVEY.

BY

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LAST week a summary of the principal results of the survey recently carried out by the Joint Council of the British Red Cross Society and the Order of St. John was published in the *BRITISH MEDICAL JOURNAL*. It will, I believe, be interesting to the medical profession to set out some of these results again and to point to some of the conclusions which may be drawn from them. The object of the survey was to obtain some indications, first, of the volume of work done by the hospitals during the year 1919, and secondly, of their present financial position. The voluntary hospitals in London were not included in the survey, but 550 hospitals (approximately 78 per cent. of the voluntary civil hospitals) throughout England and Wales were included. The hospitals dealt with included: (a) 82 general hospitals of 100 beds or over, providing together 15,958 beds; (b) 87 hospitals of 30 to 100 beds, providing 4,724 beds; (c) 240 small or cottage hospitals, providing 3,355 beds; and (d) 98 special hospitals, providing 5,784 beds. The special hospitals included twelve maternity hospitals.

#### SUMMARY OF RESULTS.

##### A. Volume of Work Done.

Of the 550 hospitals reviewed—

507 hospitals have 29,821 available beds.	
498 hospitals treated 350,459 in-patients during the year.	
376 hospitals treated 1,600,869 out-patients during the year.	
236 hospitals with 23,621 beds had a daily average occupation of 18,705.36 beds—79 per cent.	
374 hospitals show 219,196 surgical operations during the year.	
68 hospitals give figures showing the nature of cases treated—namely:	
Medical cases ... 7,034 = 21 per cent. of total.	
Surgical cases ... 26,465 = 79 " "	

##### B. Financial Position.

543 hospitals show ordinary income ...	£2,835,269
543 hospitals show ordinary expenditure ...	£3,310,896
Excess of expenditure over income ...	£475,627

##### Some Details of Ordinary Income.

316 hospitals show as workmen's contributions, direct or through Saturday Fund ...	£451,426
464 hospitals show as patients' contributions ...	£214,570
248 hospitals show as public services (for example, War Office, Pensions Ministry, Borough or County Councils) ...	£517,890
512 hospitals show as interest from investments ...	£423,044
The total from these four sources ...	£1,606,930
(56.67 per cent. of ordinary income).	

Of these 543 hospital accounts analysed—

449 hospitals show invested capital amounting to ...	£9,585,865
Yielding annual interest ...	£340,529
65 hospitals show £33,706 as annual interest, but show no capital.	
28 hospitals show no capital or interest.	

##### Depreciation of Invested Funds.

9 hospitals show invested capital amounting to ...	£306,936
Market value at end of 1919 ...	£248,199
Depreciation in value ...	£58,737

This last item is given in answer to a criticism that the hospitals in their present financial difficulty should realize some of their capital. Some few hospitals have actually been obliged to take this course, but only very few. The figures indicate that the hospitals cannot afford to unload their stock in the present state of the market.

Owing to differences in the manner of recording their results it has not been found possible to make an estimate of the average annual cost of each occupied bed, nor of the average length of stay in hospital of each in-patient. The figures from 296 hospitals show that 79 per cent. of

the beds were occupied daily; the difference (21 per cent.) of beds not in actual occupation daily is not high. It will be noted that returns from 374 hospitals show that over 200,000 surgical operations were performed during the year. An examination of the returns of 68 hospitals shows that the medical cases constitute 21 per cent. and surgical cases 79 per cent. of the total. While admitting that medical cases on the average remain probably twice as long, yet this ratio appears to indicate that medical cases are gradually being squeezed out of the hospitals. This conclusion is supported by remarks made in the annual report of several hospitals. Looking at the figures in a general way, and making an allowance for hospitals not included in the survey, it would appear that the voluntary hospitals are supplying beds in the proportion of about 1 to 1,000 of population. In my opinion this is inadequate, and the provision ought to be, in industrial areas, 3 to 1,000 of population, and in rural areas 1 or 1.5 to 1,000.

From the financial particulars given it will be seen that the deficit was about one-seventh of the total ordinary expenditure. The financial difficulties from which many of the voluntary hospitals throughout the country are known to be suffering are due to increased expenditure and diminished income.

The expenditure of hospitals is increased by the higher cost of foodstuffs, drugs, surgical dressings, and hospital furnishings; by the increased cost of labour and of materials for cleaning, repairs, and alterations; and by the increase in salaries and wages, including the larger staff needed to meet the requirements of nurses and other employees for shorter hours. In addition to these causes, common to almost all undertakings at the present time, there is the fact that the number of patients treated has largely increased; many more people are now using the hospitals than formerly; they no longer look upon them with dread as places to die in, but as healing houses where the best nursing and medical skill can be obtained to restore them to life and activity.

The diminished income is due, first, to diminished subscriptions; secondly, to depreciation in invested funds; and thirdly, to the fact that the hospitals no longer receive the capitation grant from the War Office for the military patients they did so much for during the war. The beds which were occupied by the paying military patients are to-day occupied by non-paying patients, so that some hospital committees are considering whether they must not restrict the usefulness to the public of their institutions by closing certain wards.

To prevent such a catastrophe the Joint Council of the British Red Cross Society and the Order of St. John desires to offer voluntary hospitals assistance, financial or other.

The Survey figures show that for 543 hospitals the excess of ordinary expenditure over ordinary income during 1919 was £475,627—that is to say, that for all the provincial voluntary hospitals the deficit on the year's working was approximately £600,000, a sum probably much below what had generally been supposed.

These figures, however, do not fully represent the true situation. In view of the extra cost of labour and materials many hospitals have refrained from carrying out the necessary repairs, alterations, and improvements that have fallen into arrears since the beginning of the war. Further, many have been "carrying on" with plant much of which is out of date. For instance, in some cases new laboratory provision is needed, and new x-ray plant, fresh operating theatre and appliances are necessary to bring them up to the standard of modern requirements. Especially the larger hospitals—groups (a) and (b)—are faced with increased expenditure in providing additional accommodation for an enlarged nursing staff. In fact, this is one of the most pressing problems confronting many of these hospitals. Again, there is the necessary expenditure for increasing the accommodation for patients.

It has become of late almost impossible for one to speak on this question of hospital finance without being confronted with the question, Are you in favour of the hospitals being nationalized, or do you favour the voluntary principle? I do not regard it as altogether unfortunate that this important subject of hospital service has become a matter of discussion between those holding opposite views, for both are seeking doubtless for a more efficient service in the healing of the people and the general welfare

of the State. My own impression is that the controversy is likely to end in the old-fashioned British way of compromise. There is room and need for both State aid and voluntary service. From the standpoint of finance I suggest that the voluntary principle has failed to meet the needs of the present situation, owing not to any fault in the principle as such but to the methods of its application. The voluntary principle of finance operating in many of our hospitals belongs to the nineteenth century, and has failed to adapt itself to the situation of to-day. If the voluntary methods are brought up to date, I have no doubt they will go a long way in the maintenance of our hospital system. Illustrative of the former methods, one hospital secretary informs me despairingly that his committee recently issued through the post 25,000 copies of an appeal for funds in support of the large hospital in the town, with the result that the annual subscriptions were increased by £50 and some £500 was received in donations. Now let me give two instances of more recent methods. One secretary writes:

You may be interested to hear that considerable progress has been made by the committee in connexion with their appeal for funds. With only two exceptions up to the present, all the men in the large works in the town have agreed to contribute for a period of three years the sum of 1d. in the £ earned per week, and an effort is now being made to induce the employers of labour of all kinds to contribute £1 per man over the same period, and I am glad to say there is good prospect of many of them doing so.

At another hospital the report is:

The Workpeople's Hospital Fund, which is entirely organized by the workpeople of the city, have made great efforts to induce their members to double their subscriptions at least, and to subscribe twopence per week instead of a penny, and although the scheme has only been in work for a small portion of the year, it has resulted in an increase of the funds at their disposal for the benefit of the medical charities making their grant to this one hospital of £11,500 for the year. Following on these lines a scheme is also being launched to give the employers of the city the opportunity of bearing their share in the expense of this hospital and the other charities. Under this scheme the employers make a voluntary levy upon themselves of 2s. per annum per employee (less than one halfpenny a week). So far the scheme has met with universal support, and this hospital's share will amount to £10,000 or £12,000 a year.

One well-known business firm has made an interesting offer to the local hospital—namely, to defray the actual cost of in-patient treatment of any of their employees and dependants, based on the cost of the previous hospital year.

In these examples I suggest that we have a more satisfactory basis of hospital support than has hitherto obtained.

#### *Paying Patients.*

A number of the provincial hospitals now provide private wards for the treatment of paying patients, more particularly the small or cottage hospital group. Comparatively few of group (a)—the largest type of hospital—have yet adopted this idea, but many admit that they are now considering the advisability of doing so. As soon as the public knows that in the general hospital there is accommodation for those who can afford to pay modified fees, in addition to the free beds, then I suggest that to the patients themselves may be left the choice between free and paying bed. The basis of money distribution has altered considerably since pre-war days, and hospital provision might quite well accommodate itself to the altered circumstances.

#### *State Aid.*

One of the chief functions of the Ministry of Health is to endeavour to co-ordinate the various agencies at work in the country seeking for the prevention and cure of disease. In no branch is this co-ordination more needed than in the voluntary hospital system. Each hospital to-day is an isolated unit working on its own, with comparatively little knowledge of what other hospitals are doing; and whatever be the extent of State assistance to the voluntary hospitals, I suggest that it might be accompanied by some attempt at co-ordinating the work of these institutions, leaving the management in the hands of those voluntary committees who have rendered such excellent service in the cause of the sick and suffering, and who know the local needs of their districts.

#### *Hospitals Associated with Medical Schools.*

Of the five groups of hospitals set out in the survey it will be seen that group (a)—the largest hospitals—show an

excess of ordinary expenditure over ordinary income for the year of £355,685. In that group of eighty-two hospitals are included fifteen hospitals attached to medical schools. The figures are as follows:

Number of school hospitals ... ..	15
Number of beds ... ..	4,791
Average number of beds to each hospital ... ..	319.46
Total ordinary income ... ..	£490,934
Total ordinary expenditure ... ..	£888,174
Excess of expenditure over income ... ..	£197,240

In London the medical schools and their hospitals are under the same management or authority, whereas in the provinces the medical school and the hospital are separate institutions, and administered by entirely different authorities. The Board of Education gives annual grants to the medical schools, but not to the associated hospitals, which provide the facilities for the clinical training of the medical student. These hospitals, I suggest, are important national outposts, and in the interests of the training of the future medical practitioners of the country merit some special consideration from the State.

#### *The Demand for More Beds.*

The statements made by so many voluntary hospitals as to the crowded condition of the available accommodation, and the number of patients waiting for admission, taken in conjunction with the fact that 296 hospitals, with 23,621 beds, had an average daily occupation of 18,705 (79 per cent.), indicate that the present available accommodation in the voluntary civil hospitals is not adequately meeting the needs of the people.

The pressure is undoubtedly greater in some localities than in others, and I suggest that it is sufficiently widespread and acute as to justify the need for an official inquiry on a broader and more detailed basis than that of the present survey. Such an inquiry should be undertaken by some commission visiting the more important areas and ascertaining on the spot the actual requirements, and how best they could be met. This should be undertaken before the hospitals launch the new building schemes they now have in contemplation, and also before the Government finally decides on its hospital policy.

Apart altogether from the unalleviated personal suffering, I suggest that these waiting lists have an economic importance to the State in that so many men and women have idleness and unemployment compulsorily thrust upon them.

#### *How is the Demand to be Met?*

Two questions arise with regard to the demand for more hospital beds:

First, are the present hospital beds being put to their best use? I suggest that the voluntary hospitals, instead of seeking continually to enlarge their capacity, might seriously consider the problem from another angle—namely, how to accelerate the discharge of their patients and thus make room for those on the "waiting list." I admit that to-day many patients are discharged too soon, to return to their homes, with the result that sometimes the cure begun in hospital remains uncompleted in the home and the patient's name reappears on the "waiting list." They should return to their homes by way of the convalescent hospital. Undoubtedly additional hospital provision is needed in many localities, but the suggestion is worthy of consideration before large and expensive building schemes are entered upon. Throughout the country there are to-day some 12,000 convalescent beds under the control of a large number of private associations. Of these beds, only some 2,200 are directly affiliated to the voluntary hospitals.

Further, in many hospitals there is quite a number of chronic patients never again likely to be fit for active duty who are occupying beds. They might be transferred to other institutions specially reserved for this class of case.

The second question is, Are we as a nation to continue for all time building more and more hospitals? Is there to be no attempt made to lessen the demand for and the need of these expensive institutions? There are thousands of people who might be prevented from graduating as in-patients of hospitals if in the early stages of their illnesses they were prescribed a fortnight's residence in a convalescent home in the country. Every doctor practising in industrial and manufacturing communities realizes how true that statement is. How often he is at a loss to know what to do for a patient not responding to medicine and

yet not sufficiently ill to be admitted to hospital. These are patients showing the beginnings of disease; and instead of allowing them to continue their work in the factory or shop, for which they are temporarily unfitted, they ought to be sent to the convalescent home for a short period, and thus short-circuit them from becoming hospital patients.

Our policy in dealing with disease is so often "too late," that I put forward a plea for the establishment of pre-hospital convalescent homes for the arrest of these early phases of disease, and thus lessen the ever-growing demand for more and more hospitals. Birmingham has this idea already in operation for pensioners in the form of a chain of convalescent institutions scattered along the Welsh coast.

These homes might be associated with the local municipalities, under the guidance and direction of the public health committees, whose main function is prevention rather than the cure of disease. Such institutions should operate in close association with the out-patient departments of the local hospitals. If the medical officers in attendance could be provided with a wider outlet for their treatments in the direction of convalescent homes, the pressure on the hospital beds would be relieved.

#### *Scarcity of Nurses.*

I was somewhat surprised to find how widespread was the shortage of nurses at the hospitals, both large and small. Among the larger hospitals comparatively few stated that they had a sufficient number to select their probationers from. The greater number of hospitals indicate not only a deficient supply, but also that the general standard of the applicants was not of a high order, whereas both quality and quantity were complained of in the smaller hospitals.

There is a shortage of probationer nurses, and this is a question of some national concern, for the great majority of the nurses trained in our hospitals in due course pass into the service of the general community, so that the diminished supply of probationer nurses in the hospitals to-day will, in three years' time, reveal itself in a shortage of nurses for the private household.

I submit the following reasons in explanation of the present falling off in the supply of hospital nurses—namely:

1. The inducements offered in other professions. For example, a woman may become a trained masseuse in about a third of the time required to qualify as a nurse, and receive about double the salary. A stenographer can earn from £150 to £200 per annum after twelve months' training.
2. Health visitors and the school medical service, and even the medical profession itself, are now absorbing a considerable number of women who have either trained as nurses or who would have been eligible for the nursing profession.
3. A spirit of revolt against the long hours of drudgery in ward work and the low rates of pay that have hitherto obtained in this profession.
4. A neglect on the part of the hospital authorities or of the community in which the hospital is located to offer facilities for the social welfare and general training of the nurses. Plenty of time and energy as a rule are expended on the professional side of her training, but far too little has been attempted in the way of providing opportunities for the more general development of the nurse's life.

Further, in view of the national aspect of this question, I suggest that the Ministry of Health or Board of Education might supply money grants to hospitals for the training of nurses, as is now done in the case of lying-in institutions. Such grants might be apportioned in part to the hospital and in part supplementing the nurse's salary. In this way it would be possible for the central authority to exercise some control over the general standard of training, which varies greatly in different institutions.

The nursing difficulty in the case of the small hospitals is in large measure due to the number of beds being below the standard required for a hospital to be recognized as a training school for nurses granting the requisite certificates. Obviously a probationer will select a hospital for her training that is in a position to grant her the authorized certificates.

In order to overcome this difficulty some of the smaller hospitals are making arrangements with the nearest large hospital to share in the training of probationer nurses. Further, the local Red Cross associations are prepared to recommend V.A.D. members for part-time service in these smaller hospitals.